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# TORREYA

A BI-MONTHLY JOURNAL OF BOTANICAL NOTES AND NEWS



JOHN TORREY, 1796-1872

EDITED FOR  
THE TORREY BOTANICAL CLUB  
BY  
GEORGE T. HASTINGS

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## OFFICIAL ORGAN OF THE WILD FLOWER PRESERVATION SOCIETY OF AMERICA

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## THE PHYLLOTAXY OF PHOENIX CANARIENSIS

BY CORNELIUS BEACH BRADLEY

Date palms of this species are frequently grown as ornamental trees in and about Berkeley, California. They are mostly young trees that are approaching maturity or have recently attained it. As the leaves grow old and bend low toward the ground, they are generally lopped off to get them out of the way, leaving the stumps however in place on the trunk. Since these stumps persist for years, they build up in time an authentic record of the development and arrangement of the leaves, complete save where accident or decay has marred it, and save also that it does not include the earliest period of growth; for through the enormous expansion of the trunk during that stage, all the earliest leaves are torn from their attachments and lost long before the regular trimming of the leaves begins. This record of the leaf-stumps was found to be of very great assistance in working out the phyllotaxy of the tree, and is frequently cited as "the record" in the discussion which follows.

### I

1. A preliminary survey made it evident that the problem here presented is not by any means the simple one usually encountered in a study of this kind, namely, the deciphering of a single and a stable pattern, and the identification of it with one of the "regular" patterns described in the textbooks. On the contrary, all the ordinary clues were here completely lost in a maze of uncertainty caused by constant change of pattern. Only at a single point between infancy and maturity was there a pause where the wheeling ranks stood still long enough to be counted. Never before had the writer encountered anything of this sort, nor from

*L. nodulosa* Beutm.—Orient on stems of *Rubus*.

*Livia maculipennis* Fitch.—On the inflorescence of *Juncus canadensis*.

*Neolasioptera ramuscula* Beutm.—On stems of *Doellingeria umbellata* at Orient.

*Phylloxera Caryaesemen* Walsh.—Orient on the under surface of the leaves of *Hicoria glabra*.

*Rhabdophaga strobiloides* Walsh.—On the tips of branches of *Salix humilis* at Peconic.

*Rhopalomyia hirtipes* O.S.—On aerial stems of *Solidago juncea* at Cutchogue and Peconic.

#### EUPHYCEAE

*Antithamnion americanum* (Harv.) Farl.—In the Sound at Orient; determined by Dr. M. A. Howe.

*Nitella intermedia* Nordst.—Great Pond, Southold; determined by Dr. Howe who has examined specimens twice, and says, "this species or something close to it."

#### PHYCOMYCETES

*Empusa americana* Thaxt.—On blow-flies, *Calliphora vomitoria* at Orient; determined by Prof. John Dearness. Many thousands of these flies are killed by this fungus during cold, wet spells in the summer. They are usually found clustered on the softer parts of grape vines.

*Rhysotheca Haldstedii* (Farl.) Wils.—On leaves of *Helianthus* in woods at Orient; determined by Prof. Dearness.

#### ASCOMYCETES (EXCLUDING PYRENOAMYCETES)

*Cudoniella marcida* (Müll.) Sacc.—On earth in rich woods at Cutchogue. September. Determined by Dr. C. G. Lloyd as *Leotia marcida* Pers.: Mycol. Notes 63: 964. May 1920.

*Geoglossum Farlowi* Cke.—On earth in rich woods at Greenport. October. Determined by Dr. Lloyd who says "it is a very rare plant with spores 3-septate, 80 mic. long in these." It is difficult to believe, however, that it is other than a spore variation of the more common *Geoglossum hirsutum* Pers.

*Peziza odorata* Pk.—On ashes in a cellar at Orient; determined by Dr. Charles E. Fairman.

*Phialea scutula* (Pers.) Gill.—On dead herbaceous stems at Orient; determined by Dr. Fairman.

*Pseudophacidium Betulae* Rehm.—On twigs and small branches of *Betula populifolia* at Orient. Spring. Determined by Dr. Fairman, who says the find is noteworthy; and confirmed by Dr. E. J. Durand, who reports that it agrees with Rehm's Ascomyceten No. 866 in his herbarium.

*Tapesia sanguinea* (Pers.) Fckl.—On wood of *Juniperus virginiana* at Orient; determined by Dr. Fairman.

#### ASCOMYCETES (PYRENOAMYCETES)

*Anthostoma gastrinum* (Fr.) Sacc.—On dead branches of *Amelanchier canadensis* at Orient; determined by Prof. Dearness.



- Botryosphaeria fuliginosa* (M. & N.) E. & E.—Orient on stems of *Smilax rotundifolia*; determined by Prof. Dearnness. No. 2107.
- Camarosporium Robiniae* (West.) Sacc.—Orient on *Robinia Pseudo-acacia*, associated with *Cucurbitaria elongata* (Fr.) Grev. No. 702. N. Y. State Mus. Bull. 197: 25. 1918.
- Cryptospora aculeans* (Schw.) E. & E.—On stems and twigs of *Rhus copallina* and *Toxicodendron radicans* at Orient; determined by Prof. Dearnness.
- Diaporthe* (Chorostate) *cercophora* (Ell.) Sacc.—On dead twigs and branches of *Celtis occidentalis* at Orient; determined by Prof. Dearnness.
- Diaporthe* (Euporthe) *cryptica* Nitschke—Orient on stems of *Lonicera japonica*; determined by Prof. Dearnness.
- Diaporthe* (Euporthe) *euspina* (C. & E.) Sacc.—Base of stems of *Chenopodium ambrosioides* at Orient; determined by Prof. Dearnness.
- Diaporthe* (Chorostate) *oxyspora* (Pk.) Sacc.—On twigs and branches of *Ilex verticillata* at Orient. N. Y. State Mus. Bull. 197: 38. 1918. (*Diaporthe ocularia* (C. & E.) Sacc.)
- Diatrype Baccharidis* Earle—Orient on stems and branches of *Baccharis halimifolia*; determined by Prof. Dearnness. No. 4033.
- D. disciformis* (Hoffm.) Fr.—On branches of *Myrica caroliniensis* at Orient; determined by Prof. Dearnness.
- Diatrypella verrucaeformis* (Ehrh.) Nitschke—On trunks of *Myrica caroliniensis* at Orient; determined by Dr. Fairman.
- Didymosphaeria Celtidis* E. & E.—On twigs of *Celtis occidentalis* at Orient; determined by Prof. Dearnness.
- Dothidea collecta* (Schw.) E. & E.—Orient on twigs of *Iva frutescens*; determined by Prof. Dearnness.
- Erysiphe Cichoracearum* DC.—On leaves and stems of *Plantago Rugelii* at Orient; determined by Dr. Fairman.
- Eutypa leucostroma* (Mont.) Sacc.—On stems of *Smilax rotundifolia* at Orient; determined by Dr. Fairman.
- E. sepulta* (B. & C.) E. & E.—Orient on stems of *Smilax rotundifolia*; determined by Prof. Dearnness.
- Eutypella cerviculata* (Fr.) Sacc.—On branches of *Celtis occidentalis* at Orient; determined by Prof. Dearnness.
- E. Gleditschiae* Berl.—On dead twigs of *Gleditschia triacanthos* at Orient. No. 724. N. Y. State Mus. Bull. 197: 29. 1918.
- E. scoparia* (Schw.) E. & E.—Orient on twigs of *Robinia Pseudo-acacia*; determined by Prof. Dearnness. No. 1041.
- E. venusta* (Ell.) Sacc.—Orient on twigs of *Robinia Pseudo-acacia*; determined by Prof. Dearnness. No. 1198.
- Gibberella pulicaris* (Fr.) Sacc.—On stalks of *Zea Mays* at Orient; determined by Dr. Fairman.
- Glioniella ovata* (Cke.) Sacc.—On decorticated and weathered wood of *Castanea dentata* at Orient. "The type of this species (collected by Ravenel in Carolina) is said to be on oak." No. 824. N. Y. State Mus. Bull. 205-206: 51. 1919.
- Glioniopsis Cookeana* (Ger.) Sacc.—Orient on dead wood of *Quercus alba*,

- .. dead branches of *Myrica caroliniensis*, dead decorticated branches of *Rhus glabra* and *Xolisma ligustrina*. N. Y. State Mus. Bull. 197: 39. 1918.
- Guignardia Bidwellii* (Ellis) Viala & Ravaz—On fruit of cultivated grapes; determined by Prof. Dearness and Dr. Fairman. It is associated with *Phoma uvicola* B. & C. which Rostrup states is a stage of *Guignardia Bidwellii*.
- Hypocrea rufa* (Pers.) Fr.—A Corticium-like plant growing on oak; determined by Prof. Dearness. No. 3387.
- Hypoxylon multifforme* Fr.?—On wood of *Quercus velutina* at Orient; determined by Dr. Lloyd (printed): Letter 67: 7. July 1918.
- H. rubiginosum* (Pers.) Fr.—Orient on dead branches of *Rhus copallina*; determined by Prof. Dearness.
- Hysterographium Lesquereuxii* (Duby) Sacc.—On dead branches of *Gleditschia triacanthos* at Orient. N. Y. State Mus. Bull. 197: 30. 1918.
- H. Vaccinii* (Schw.) Fairman—This combination was made in the First Supplementary List in Torreya 17: 113. July 1917: but was wrongly spelled *Hysteriographium Vaccinii*.
- Massaria conspurcata* (Wallr.) Sacc.—On twigs of *Padus virginiana* (*Prunus serotina* Ehrh.) at Orient. Determined by Dr. Fairman, who says, "spores  $60-65 \times 13.5-14 \mu$ ." According to Ellis & Everhart, your specimen has spores agreeing more with those distributed by Dr. Rehm (in his Ascomyceten) than what Ellis noted in this country. That is, they are about the same width as foreign specimens and wider than those usually found here.
- Massarinula Brassicae* Dearn. & House—On dead stems of Brussels Sprouts, *Brassica oleracea gemmifera*, at Orient. September 1915. Type in the herbarium of the N. Y. State Museum. Described in N. Y. State Mus. Bull. 197: 31. 1918.
- Microsphaera Alni* (Wallr.) Salmon—The var. *Vaccinii* (Schw.) Salmon on leaves of *Vaccinium corymbosum* at Orient; determined by Prof. Dearness.
- Phyllachora Graminis* (Pers.) Fckl.—The var. *Panici* (Schw.) Spear on leaves of *Panicum clandestinum*, common throughout the town; determined by Prof. Dearness.
- P. Pteridis* (Reb.) Fckl.—On fronds of *Pteridium aquilinum* at Mattituck; determined by Prof. Dearness.
- Pyrenophora calvescens* (Fr.) Sacc.—On *Chenopodium ambrosioides*; determined by Prof. Dearness.
- Rosellinia protuberans* Karst.—Orient on wood of *Baccharis halimifolia*; determined by Dr. Fairman.
- R. pulveracea* (Ehrh.) Fckl.—On twigs of *Celtis occidentalis*; determined by Prof. Dearness.
- Sphaerella pardalota* C. & E.—Orient on old leaves of *Myrica caroliniensis*; determined by Dr. Fairman.
- Trematosphaeria nuclearia* (DeNot.) Sacc.—On decaying nuts of *Hicoria glabra* at Orient; determined by Prof. Dearness. No. 1202.
- Valsa Liquidambaris* (Schw.) Cke.—On dead stems of *Hamamelis virginiana* at Orient. "A new host species. The asci are  $30-33 \times 8 \mu$ , the spores eight in an ascus,  $8-9 \times 2 \mu$ , hyaline, allantoid." N. Y. State Mus. Bull. 197: 45. 1918.

- V. Pini* (A. & S.) Fr.—On dead bark and twigs of *Pinus Strobus* at Greenport; determined by Prof. Dearness. The fallen trunk of one tree that had been cut about a year was completely covered with this species, abundantly fruiting.
- V. subcylpeata* C. & P.—Orient on dead branches of sassafras; determined by Prof. Dearness.
- Xylaria corniformis* Fr.—On buried roots of *Quercus velutina* at Orient; determined by Dr. Lloyd (printed): Letter 66: 4. Oct. 1917.

## HYPOMYCETES

- Cercospora Acalyphae* Pk.—Orient on leaves of *Acalypha gracilens*; determined by Prof. Dearness.
- C. circumscissa* Sacc.—Common at Orient on leaves of *Padus virginiana* (*Prunus serotina*); determined by Prof. Dearness.
- C. copallina* Cke.—Cutchogue on leaves of *Rhus copallina*; determined by Prof. Dearness who says, "this is likely only a synonym of *Cercospora rhoina* C. & E."
- C. rhoina* C. & E.—On leaves of *Rhus copallina* at Cutchogue; determined by Prof. Dearness.
- Cladosporium herbarum* (Pers.) Link—Orient on leaves of *Hemerocallis fulva*; determined by Prof. Dearness.
- Exosporium Tiliae* Link—Orient on dead branches and trunks of *Tilia vulgaris*; determined by Prof. Dearness.
- Fusarium Celtidis* Ell. & Tracy—Orient on twigs of *Celtis occidentalis*; determined by Prof. Dearness.

## MELANCONIALES

- Cylindrosporium Iridis* E. & H.—On living leaves of *Iris versicolor* at Orient. N. Y. State Mus. Bull. 197: 27. 1918.
- Gloeosporium Opuntiae* E. & E.—On leaves of *Opuntia*; determined by Dr. Fairman. Large patches of the Eastern Prickly Pear have been killed by this fungus at Orient.
- Marsonia Potentillae* (Desm.) Fisch.—Greenport on leaves of *Potentilla canadensis*; determined by Dr. House.
- Melanconium betulinum* Schm. & Kze.—On twigs of *Betula populifolia* at Greenport; determined by Dr. Fairman.
- Pestalozzia uncinata* Ell. & Kell.—On leaves of *Quercus velutina*; determined by Dr. House.
- Stagonospora Chenopodii* Pk.—(*Phleospora Chenopodii* E. & K.) On leaves of *Atriplex hastata*, common at Orient; determined by Prof. Dearness.
- Steganosporium acerinum* Pk.—Orient on dead branches of *Acer Pseudo-Platanus*. Determined by Prof. Dearness who says, "may be a synonym of *Steganosporium piriforme* (Hoffm.) Cda.: Mr. Ellis used to call the larger spore form *S. cellulolum* Cda. and the smaller spore form *S. piriforme*. The spores are  $36 \times 18 \mu$ ."

## SPHAEROPSIDEAE

- Coniothyrium concentricum* (Desm.) Sacc.—On leaves of cultivated *Yucca* at Orient; determined by Prof. Dearness.
- Leptostromella Chenopodii* Dearn. & House—Orient on dead stems of *Chenopodium album*. Described in N. Y. State Mus. Bull. 205-206: 53-54. 1919.
- Macrophoma celtidicola* Dearn. & House—Orient on twigs of *Celtis occidentalis*; determined by Prof. Dearness.
- Phlyctaena arcuata* Berk.—Orient on dead stems of *Helianthus annuus*. No. 726. "Spores filiform arcuate to falcate,  $25\mu$  long." N. Y. State Mus. Bull. 205-206: 55. 1919.
- Phoma Celtidis* Cke.—On twigs of *Celtis occidentalis*; determined by Prof. Dearness. No. 3388.
- Phyllosticta Chenopodii* Sacc.—On leaves of *Chenopodium album* at Orient; determined by Dr. Fairman.
- P. Kalmicola* Schw.—Greenport on leaves of *Kalmia latifolia*; determined by Prof. Dearness.
- Phyllosticta limitata* Pk.—On leaves of apple, *Malus*; determined by Prof. Dearness. Very abundant throughout the town during the summer of 1919: and practically defoliating some trees.
- P. minima* (B. & C.) E. & E.—Laurel on leaves of *Acer rubrum*; determined by Dr. Fairman.
- P. Sassafra* Cke.—On leaves of *Sassafras*, common throughout the township. Determined by Prof. Dearness who says, "Ellis and Everhart in their North American *Phyllostictas* say the specimens available for examination are all sterile and that the species must be put in the doubtful class. The spots on some of these leaves have pycnidia with the small spores of the description; but most of the spots are sterile."
- Septoria brunneola* (Fr.) Niessl.—Cutchogue on leaves of *Vagnera racemosa*; determined by Prof. Dearness.
- S. Macrosporia* Dearn.—On leaves of *Chrysanthemum Leucanthemum* at Orient. Prof. Dearness says, "externally it is exactly like it but the spores fall short in average size."
- S. mollisia* Dearn & House—Mattituck on leaves of *Antennaria plantaginifolia*; determined by Prof. Dearness, who says this may be the same as Fairman's *Septoria lanaria*.
- S. Polygonorum* Desm.—Orient on leaves of *Persicaria Persicaria*; determined by Prof. Dearness.
- S. Stellariae* Rob. & Desm.—On leaves of *Alsine media* at Orient. Determined by Prof. Dearness who says, "the same as *Fungi Columb.* No. 775, which Mr. Ellis named as the above. It is not very distinct from *Septoria Silenicola* Ell. & Mart."
- S. Violae* West.—Greenport on leaves of *Viola cucullata*; determined by Prof. Dearness.
- Sphaeronema Robiniae* B. & C.—On twigs and branches of *Tilia americana* at Orient; determined by Prof. Dearness.

- Sphaeropsis Celtidis* E. & E.—On twigs of *Celtis occidentalis* at Orient. No. 3561. Determined by Dr. Fairman who says, "Cfr. Am. Nat. 428. 1897 and Saccardo Syl. 14: 921. I have never had this before: it was originally named from a specimen collected by Bartholomew on *Celtis occidentalis* in Kansas."
- S. Syringae* C. & E.—Orient on twigs of *Syringa vulgaris*; determined by Dr. Fairman.
- Vermicularia herbarum* West.—On old stems of *Geranium maculatum* at Orient; determined by Prof. Dearness.

## USTILIGINACEAE

- Sorosporium Syntherismae* (Pk.) Farl.—Orient on *Panicum dichotomiflorum*; determined by Dr. G. P. Clinton.

## UREDINACEAE\*

- Peridermium Peckii* Thüm.—Common. On *Azalea viscosa* at Greenport, Peconic and Southold. On *Gaylussacia baccata* at Cutchogue. (*Puccinias-trum Myrtilli* (Schum.) Arth.)
- P. pyriforme* Pk.—Found sparingly during August on leaves of *Comandra umbellata* at Mattituck. (*Cronartium Comandrae* Pk.)
- Pucciniastrum Agrimoniae* (Schw.) Tranz.—Orient on leaves of *Agrimonia gryposepala*.
- P. Pyrolae* (Pers.) Diet.—Southold on *Chimaphila maculata*; but one collection found.

## PUCCINIACEAE

- Puccinia Anemones-Virginianae* Schw.—On leaves of *Anemone Virginiana* at Indian Neck, Peconic. August.
- P. Circaeae* Pers.—Orient on leaves of *Circaea Lutetiana*.
- P. Ellisiana* Thüm.—Orient on *Schizachyrium scoparium*. November.
- P. investita* Schw.—On *Gnaphalium obtusifolium* at Cutchogue, Orient and Peconic. August.
- P. minutissima* Arth.—Mattituck on stems and leaves of *Decodon verticillatus*. August. Very common in one swamp and forming large swellings on stems and the midveins of leaves. (*Aecidium Nesaeae* Ger.)
- P. patruelis* Arth.—On leaves of *Lactuca canadensis* at Orient. June. Dr. Arthur says, "lately has been called *Puccinia hieraciata* (Schw.) Jackson. This is rather a rare rust in New York and in fact throughout the Atlantic states: but is very common in the interior. It has telia on various species of *Carex*."
- Uromyces Hyperici-frondosi* (Schw.) Arth.—Gardiner's Island on leaves of *Hypericum mutilum*; determined by Burnham.
- U. Lespedezae-procumbentis* (Schw.) Curt.—On *Lespedeza capitata* at Cutchogue, Peconic and Southold. On *Lespedeza virginica* at Cutchogue. Locally common at these stations. (*Nigredo Lespedezae-procumbentis* (Schw.) Arth.)

\* Unless otherwise stated the Rusts were determined by Dr. J. C. Arthur.

*U. Polemonii* (Pk.) Barth.—N. Y. State Mus. Bull. 197: 13. 1918, as a contribution; probably on *Spartina stricta alterniflora*.

#### TREMELLACEAE

- Dacryomyces deliquescens* (Bull.) Duby—On old wood of *Juniperus virginiana*; determined by Dr. Lloyd: Mycol. Notes 63: 964. May 1920.  
*Exidia recisa* Fr. On branches of *Quercus velutina* at Orient; determined by Dr. Lloyd: Mycol. Notes 63: 964. May 1920.  
*Naematelia nucleata* (Schw.) Fr.—On old bark of *Quercus velutina*; determined by Dr. Lloyd (printed): Letter 66: 4. Oct. 1917.

#### THELEPHORACEAE

- Aleurodiscus nivosus* (B. & C.) v. Höhn & Litsch.—On bark of *Juniperus virginiana* at Orient. No. 189. (In Mo. Bot. Gard. Herb., 44228) (*Stereum acerinum* Pers., var. *nivosum* B. & C.) Ann. Mo. Bot. Gard. 5: 195. 1918.  
*Craterellus cornucopioides* (L.) Pers.—“Note 862. The common *Craterellus cornucopioides* is usually so regular and cup shaped that we were somewhat surprised to receive a collection lobed and almost divided at the base, from Mr. Latham. We supposed that it had been torn accidentally but Mr. Latham stated that it grew naturally in this way and he found a large colony of this form” Dr. Lloyd’s Mycol. Notes 63: 965. May 1920.  
*Cyphella muscigena* (Pers.) Fr.—*Thuidium paludosum* has been found “only in one locality, a blackish meadow in Orient. It is common there, but rarely fruiting. It is a frequent host of *Cyphella* in this plot. There are several other species of musci associated with the *Thuidium*. It is interesting that the fungus should go commonly to this single species and not at all to the others.” Bryol. 23: 7. Jan. 1920. Determined by Dr. Fairman.  
*Hymenochaete agglutinans* Ellis—On *Sassafras*; determined by Prof. Dearness.  
*H. corrugata* (Fr.) Lev.—Orient. No. 154. (In Mo. Bot. Gard. Herb., 44229.) Determined by Dr. E. A. Burt. Ann. Mo. Bot. Gard. 5: 361. 1918.  
*Thelephora multipartita* Schw.—On earth in woods at Orient; determined by Dr. Lloyd: Mycol. Notes 63: 965. May 1920.  
*Thelephora spiculosa* Fr.—On earth in dry woods at Cutchogue; determined by Dr. Lloyd who says “rare.”  
*Tremellodendron merismatoides* (Schw.) Burt—On heavy soil in woods at Orient; determined by Dr. Lloyd.

#### HYDNACEAE

- Hydnum caryophyllum* B. & C.—On old wood of *Hicoria glabra* at Orient; determined by Prof. Dearness.  
*H. vellereum* Pk.—In dry woods at Cutchogue. Dr. Lloyd says, “quite fragrant when received”: Mycol. Notes 63: 964. May 1920, as *Hydnum amicum* Quel.  
*H. sonatum* of American Mycology—In dry woods on earth at Cutchogue. Determined by Dr. Lloyd: Mycol. Notes 63: 964. May 1920, as *Hydnum scrobiculatum* Fr.

*Phlebia merismoides* Fr.—Orient on *Prunus Avium*; determined by Dr. Lloyd (printed): Letter 69: 7. April 1919.

*Radulum pallidum* B. & C.—On underside of a decayed log of *Pinus Strobus* in a swamp at Greenport; determined by Dr. Lloyd (printed): Letter 69: 7. April 1919.

#### POLYPORACEAE

*Daedalea ochracea* Lloyd—On oaks at Cutchogue; determined by Dr. Lloyd: Mycol. Notes 63: 964. May 1920. Under Note No. 137, Dr. Lloyd says, "I would designate the light colored forms of *Daedalea unicolor* . . . which correspond to *Polystictus ochraceus* as forms of *Polystictus hirsutus*."

*Merulius bellus* B. & C.—Orient, "comm. by N. Y. State Herb., P66 (in Mo. Bot. Gard. Herb., 43604)." Ann. Mo. Bot. Gard. 4: 332. Nov. 1917.

*Merulius brassicaefolius* Schw.—On earth in a cellar at Orient; determined by Dr. Lloyd.

*Polyporus brumalis* (Pers.) Fr.—Greenport on *Vaccinium*; Orient on wild cherry; and Southold on *Sambucus canadensis*.

*P. (Ganoderma) Curtisii* Berk.—On trunks of living apple tree. Determined by Dr. Lloyd who says, "this is a southern unvarnished form of *Polyporus lucidus*, it is quite common in the south, but rarely found as far north as with you" (printed): Letter 67: 7. July 1918. Previously reported as *Ganoderma pseudoboletus* (Jacq.) Murrill.

*P. pocula* (Schw.) B. & C.—Orient on living bark of *Quercus velutina* at Orient. Found growing in clusters in April. Determined by Dr. Lloyd who says, "a unique little species": Mycol. Notes 63. 965. May 1920.

*P. stipticus* (Pers.) Fr.—On wood of *Quercus velutina* at Orient; determined by Dr. Lloyd (printed): Letter 66: 4. Oct. 1917.

*P. trabeus* Rostk.—On wood of *Quercus velutina* at Orient; determined by Dr. Lloyd (printed): Letter 67: 7. July 1918.

*Polystictus dependens* B. & C.—On the underside of a log of *Pinus rigida* at Cutchogue. September. No. 2080. A colony of about a dozen plants ranging from  $\frac{1}{4}$  to  $\frac{3}{4}$  of an inch in diameter. "Note 861. A rare species (Cfr. Stip. Polyporoids, p. 165) only known from a few stations in the south. This is the only collection in any way northern. Otherwise it is only known from one collection from Japan": Dr. Lloyd's Mycol. Notes 63: 965. May 1920.

*Polystictus hirsutus* (Wulf.) Fr.—The form *Polystictus hirsutulus* Schw. on *Quercus velutina* at Orient; determined by Dr. Lloyd (printed): Letter 69: 7. April 1919.

*Poria omoema* Berk.—On limbs of *Betula populifolia* at Orient; determined by Prof. Dearness who says a similar plant was named this species for him by Mr. Ellis. The type of this species was collected on pine in South Carolina by Mr. Ravenel. (= *Poria subacida* (Pk.) Sacc.)

#### AGARICACEAE

*Crepidotus applanatus* (Pers.) Fr.—Orient on trunks of *Quercus velutina*; determined by Dr. Lloyd (printed): Letter 67: 7. July 1918.



- Lenzites albida* Fr.—On trunk of *Acer rubrum* at Greenport; determined by Dr. Lloyd who says, "the old, bleached white, wintered, lenzitoid form of *Daedalea confragosa*."
- L. corrugata* Klotsch.—Orient on oaks and *Sassafras*; determined by Dr. Lloyd (printed): Letter 69: 7. April 1919.
- Panus strigosus* B. & C.—Formerly reported from Orient as *Panus levis* Berk. The Orient plant is figured in Dr. Lloyd's Mycol. Notes 52: 746. fig. 1120. Dec. 1917.
- Pleurotus niger* Schw.—On terminal branches of *Rhus copallina* at Orient. Plants  $\frac{1}{4}$  of an inch in diameter and slaty black. Dr. Lloyd says it is rare (printed): Letter 69: 7. April 1919.
- P. sapidus* Klachb.—On stumps of *Hicoria glabra* at Orient; determined by Dr. Lloyd (printed): Letter 69: 7. April 1919, and Mycol. Notes 63: 965. May 1920.

## GASTEROMYCETES

- Calvatia lilicina* Berk.—On earth in rich woods at Orient; determined by Dr. Lloyd: Mycol. Notes 63: 965. May 1920.
- Dictyophora duplicata* (Bosc) Ed. Fisch.—On earth in moist woods at Cutchogue, Orient and Southold; determined by Dr. Lloyd as *Phallus duplicatus*: Mycol. Notes 63: 964. May 1920.
- Lycoperdon gemmatum* Batsch.—On pure sand at Orient; determined by Dr. Lloyd.
- Scleroderma Cepa* Pers.—On pure sand in shade of pines and open ground at Southold; determined by Dr. Lloyd: Mycol. Notes 63: 964. May 1920.

## MUSCI

- Amblystegium varium* (Hedw.) Lindb.—Orient at the base of a hickory tree about a moist cavity; determined by Mr. G. B. Kaiser.
- Fontinalis gigantea* Sulliv.—Swamp woods in water at Mattituck; determined by Dr. A. J. Grout. No. 1736.
- Mnium cinclidioides* Hüben.—In a swamp at Mattituck. No. 1843. Determined by Dr. Grout who says, "a depauperate form . . . the first to be reported from Long Island so far as I know, although it apparently is frequent along the west bank of the Hudson river."

## POLYPODIACEAE

- Adiantum pedatum* L.—Southold, localized in moist woods south of Great Pond. The reference to this species in the first part of this Flora was an error: the above record is the only known station in the town. It was first discovered many years ago by Miss Mary H. Huntting and reported by Mrs. Frank D. Smith.
- Polypodium vulgare* L.—Sandy soil at Orient. No. 2331.
- Polystichum acrostichoides* (Mx.) Schott.—Rare in woods south of Great Pond, Southold, Sept. 10, 1919. No. 4088.

## LYCOPODIACEAE

*Lycopodium adpressum* (Chapm.) Lloyd & Underw.—Southold in a sandy bog.  
No. 3455.

*L. obscurum* L.—Moist woods at Orient and Southold.

(To be continued)

## NEW COMBINATIONS FOR PHANEROGAMIC NAMES

BY J. C. ARTHUR

In order to secure uniformity in citing the names of hosts for species of Uredinales the following new combinations are proposed. So far as the writer can ascertain these combinations have not been made before, and in coming to this conclusion he has had the kindly assistance of a number of correspondents.

**Cnidoscolus urens** (L.) comb. nov. (*Jatropha urens* L. Sp. Pl. 1007. 1753). A common plant of tropical America, bearing *Uromyces oaxacanus* Diet. & Holw.

**Adenoropium angustifolium** (Griseb.) comb. nov. (*Jatropha angustifolia* Griseb.; Goett. Nachr. 171. 1865). A Cuban species bearing the imperfectly known rust *Uredo jatrophiicola* Arth.

**Vincetoxicum bifidum** (Hemsl.) comb. nov. (*Gonolobus bifidus* Hemsl., Biol. Centr. Am. Bot. 2: 330. 1879).

**Vincetoxicum erianthum** (Decaisne) comb. nov. (*Gonolobus erianthus* Decaisne; DC. Prodr. 8: 592. 1844).

**Vincetoxicum uniflorum** (H.B.K.) comb. nov. (*Gonolobus uniflorus* H.B.K. Nov. Gen. Sp. 3: 207. 1818). These three Mexican species of *Vincetoxicum*, belonging to the Asclepiadaceae, bear the very common tropical rust *Puccinia obliqua* Berk. & Curt.

**Sphaeralcea arcuata** (Greene) comb. nov. (*Malvastrum arcuatum* Robinson; A. Gray, Synop. Fl. N. Am. 1<sup>1</sup>: 311. 1878).

**Sphaeralcea fasciculata** (Nutt.) comb. nov. (*Malva fasciculata* Nutt.; T. & G. Flora N. Am. 1: 225. 1838). These two Californian species belonging to Malvaceae bear the common western rust *Puccinia Sherardiana* Körn.

**Madronella viridis** (Jepson) comb. nov. (*Monardella viridis* Jepson, Flora W. Mid. Calif. 465. 1901). A plant of western California bearing *Puccinia Monardellae* Dudl. & Thomp., a distinctively Californian rust.

**Coleosanthus megalodontus** (Greenm.) comb. nov. (*Brickellia megalodonta* Greenm. Proc. Am. Acad. 40: 34. 1904). A Mexican plant bearing the rust *Puccinia Brickelliae* Peck.

PURDUE UNIVERSITY,  
LAFAYETTE, INDIANA

### SHORTER NOTES

NOTES ON *HEMEROCALLIS*, II.—A previous note (Amer. Mid. Nat. 1914-15) dealt with the nomenclature, specific description, and the distribution of the North American members of this genus, *H. fulva* and *H. flava*. In 1917, the writer conducted experiments upon *H. fulva*, obtaining results which appear to be of interest if only from a negative standpoint, since the experimental procedure involved seems somewhat similar to the more probable physiological forces at work in the conditions under which the plant forms mature seeds.

Referring to Knuth's Handbook of Flower Pollination, we read that, "according to Sprengel's assertion which Kerner confirms, the plant (*H. fulva*) never sets fruit here, so it is highly probable that in its original home in E. Asia, it is pollinated by such insects as are not to be found in Europe. Maximowicz states that artificial pollination is also ineffective, the flowers do not produce mature seeds in Europe. Sprengel, who pollinated the flowers artificially with their own pollen, also obtained no fruits, etc."

No such limitations affect *H. flava*, indeed Linnaeus believed *H. flava* and *H. fulva* (commonly known as the yellow lily and day lily respectively) to form a composite type species (*H. lilio-asphodelus*), for the genus, and that one was really a variety of the other, a fact readily comprehensible when their great anatomical, if not physiological resemblance, be kept in mind.

Largely from the basis of the preceding information the writer attempted to produce mature seeds in *H. fulva*. The experiments conducted divided themselves into four groups:

I. Fertilization of the flowers with their own pollen.

a. After the blossoms had completely opened.

b. Before the blossoms had opened sufficiently for them to be pollinated from other sources, but when their own pollen seemed about to discharge.

c. Before the blossoms had opened sufficiently to obtain pollen from other sources, an incision was made in the ovary, and pollen as obtained in the preceding placed therein.

d. Before the blossom had completely opened the stigma was snipped off, and pollen placed directly upon the top of the style.

II. Fertilization of the flower with pollen from the same clump of day lilies. In this group further procedure was essentially similar to that outlined in Group I, except that the anthers of the flower were first removed.

III. Fertilization of the flowers with the pollen of a far removed clump of day lilies. Inquiry revealed the fact that this group of the plants and that used in Group I did not have a common original locality and were probably genetically distinct. In Group III also the further procedure was similar to Group I, except that the anthers of the pollinated flower were first removed.

IV. Fertilization of the flowers with pollen from the yellow lily, *H. flava*. Attempts at cross-fertilization were made as already indicated in the other groups.

Control of the above experiments was obtained by tying a small paper bag over each experimental flower. *The results of the above experiments were negative in every respect.* No mature seeds were ever formed. An effect of the paper bags was to lengthen the life of the flower appreciably.

In a previous number of *TORREYA* (Vol. 18, Dec. 1918), double flowers were reported for *H. fulva*. Continued observation indicates that such seem common in the Mississippi river region from Missouri up to St. Paul, Minn. In some localities no other type of flower was observed.

N. M. GRIER

WASHINGTON AND JEFFERSON COLLEGE,  
WASHINGTON, PA.

## REVIEWS

**Gager's Heredity and Evolution in Plants**

Under this comprehensive title, Dr. C. Stuart Gager has recently published a little book (P. Blakiston's Son & Co., pages xiii + 265, price \$1.25) of remarkable interest: remarkable in that it presents within so small a compass a digest of such broad and complex subjects.

The whole book may be summarized in a few lines. The reproductive system is the machinery for heredity; long-continued heredity is evolution; the results of evolution are expressed by the morphological differentiation of plants and by their distribution in space and time. Each of these themes is discussed by the author in turn.

Under the first head, the author devotes two chapters to the life history of a fern, wisely selecting for illustration a plant with well developed gametophyte rather than an angiosperm. The third chapter introduces some general considerations based on the facts presented in the two preceding, and discusses briefly but clearly the general nature of reproduction, alternation of generations, and reduction; this is followed by a general definition of inheritance and an entirely too brief discussion of the struggle for existence and the elimination of the unfit. Unfortunately this portion is marred by two rather serious errors or omissions.

The fourth chapter deals with the laws of heredity. Here the reviewer, who makes no pretence of erudition in genetics, at once came into difficulties. On page 40, inheritance is defined as "the recurrence in successive generations of a similar cellular constitution," while on page 48 the statement is made that inheritance is "all that an organism has to start with. It is the protoplasmic substance, with all its potentialities, passed on from parent to offspring." Now thorns recur on successive generations of roses, agreeing with the first definition, but a young rose does not have thorns to start with. Would it not have been just as clear to the general reader if inheritance had been defined as the potentiality of the protoplasmic substance passed on from

parent to offspring? The author then shows the distinction between inheritance and expression of heredity, and passes on to chapter 5, the experimental study of heredity. About half of this is devoted to an exposition of the well known work of Mendel and the rest to the work of Johannsen and Weismann, including a statement of the general unsolved problems developed as a result of their investigations.

Chapters 6 and 7 discuss the general nature of evolution, which is regarded as the major problem of botany, describing the ideas of Agassiz and Lamarck briefly and those of Darwin and Wallace in greater detail. These two chapters impress the reviewer as unusually well written. Chapter 8, on experimental evolution, is devoted almost entirely to a summary of the methods and results of De Vries' experiments and to the mutation theory in general.

The second half of the book deals with the results of evolution in plants, attempting to present modern ideas on the genetic relations of plants and on the phylogeny of angiosperms in particular, utilizing evidence from the comparative morphology and life history of living plants, from geographical distribution, and from the structure and chronological succession of fossil forms. The author inclines strongly toward Bower's ideas, but tries to present all sides of the question impartially. The 44 pages devoted to geographical distribution make an excellent compendium of the whole subject, presenting not the actual facts of modern distribution but rather the general nature and dynamics of the subject, basing the whole on the migration of seeds and proceeding to a discussion of endemism, discontinuous distribution, and the age and area hypothesis.

A shorter chapter deals with some of the general principles derived from a study of fossil plants, beginning with the conditions of fossil formation, presenting a general statement of the distribution of plants in time, and discussing in interesting fashion the causes of the extinction of species.

In chapter 12 the fossil seed-bearing ferns are discussed in more detail, particularly the Cycadeoidea, which are accepted by the author as the immediate progenitors of angiosperms, following the views of Arber and others, which are presented in inter-

esting and critical form. Polycotyledony is regarded as more primitive than dicotyledony, in agreement with the recent work of Bucholz, and the monocotyledons are derived from the Ranzanian plexus. Due attention is of course given to other theories. The final chapter presents in tabular form the names and classification of the main groups of plants, with the angiosperms placed in practically the Engler and Prantl sequence. A brief bibliography and index occupy the remaining pages.

In general, the book is both interesting and readable. It is modern in including recent developments in botanical science, fair in presenting different controversial views, and satisfactory in inclining to one view while recognizing the claims of others. Unfortunately, typographical errors are frequent.

H. A. GLEASON

#### NEWS ITEMS

Contributors will please note that Mr. Norman Taylor, who has been the editor of *TORREYA* for the last ten years has resigned that position. Mr. George T. Hastings of 7 Robbins Place, Yonkers, N. Y., has been elected editor and all matters relating to *TORREYA* should be sent him.

Dr. and Mrs. N. L. Britton, accompanied by Dr. F. J. Seaver, have sailed for Trinidad where exploration of that island and adjacent regions will be carried on.



# The Torrey Botanical Club\*

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### (1) BULLETIN

A monthly journal devoted to general botany, established 1870. Vol. 47 published in 1920, contained 598 pages of text and 17 full-page plates. Price \$4.00 per annum. For Europe, 18 shillings. Dulau & Co., 47 Soho Square, London, are, agents for England.

Of former volumes, only 24-47 can be supplied entire; certain numbers of other volumes are available, but the entire stock of some numbers has been reserved for the completion of sets. Vols. 24-27 are furnished at the published price of two dollars each; Vols. 28-47 three dollars each.

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### (2) MEMOIRS

The MEMOIRS, established 1889, are published at irregular intervals. Volumes 1-15 are now completed; No. 1 of Vol. 16 has been issued. The subscription price is fixed at \$3.00 per volume in advance; Vol. 17, containing Proceedings of the Semi-Centennial Anniversary of the Club, 490 pages, was issued in 1918, price \$5.00. Certain numbers can also be purchased singly. A list of titles of the individual papers and of prices will be furnished on application.

(3) The Preliminary Catalogue of Anthophyta and Pteridophyta reported as growing within one hundred miles of New York, 1888. Price, \$1.00.

Correspondence relating to the above publications should be addressed to

DR. F. J. SEAVER

New York Botanical Garden

Bronx Park, New York City

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BY

GEORGE T. HASTINGS



JOHN TORREY, 1796-1873.

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# TORREYA

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No. 5

## THE FOREST FLORA OF GRASSY SPRAIN RIDGE

By G. T. HASTINGS

In walking through the woods in parts of Westchester County just above New York City the impression was gained that a new type of forest flora is developing there. To test the accuracy of this, and at the same time to see if any correlation could be made between the herbaceous vegetation and particular species of trees, a study was made of the plants on the top and upper slopes of Grassy Sprain Ridge. In the study the adaptation of the quadrat method suggested by Dr. H. A. Gleason\* was followed. One meter quadrats were taken every twenty-five paces on lines along the top and slopes of the ridge. On the quadrat each species of herb and shrubs was listed and notes made of the surroundings. All the trees within two meters of the line were counted.

Grassy Sprain Ridge is one of several ridges parallel to the Hudson Valley in Westchester County. These ridges were all originally forested, have all been partially cut over and have generally gone back to forest condition. The ridge is about two and a half miles long, about a half mile broad and is cut across by a swampy area. There are several rocky knobs along both parts of the ridge and a little level land on parts of the summit. The soil is rocky, with frequent outcrops of gneissic rocks, and is nowhere deep or rich except in a few swampy hollows. A small part of the land was formerly cleared, but at present only a very small area is pastured, and none is or has recently been cultivated.

Forty-one species of trees were listed, this including several small forms—*Cornus florida*, *Carpinus*, *Ostrya*, *Hamamelis*, *Rhus*, *Sassafras*, and *Viburnum prunifolium*, two cultivated trees that have grown wild, and one that is practically extinct, *Castanea*, and

\* Bulletin of the Torrey Botanical Club, 47: 21-33. Feb. 1920.

several others that will disappear as the forest develops—*Ailanthus*, *Robinia*, *Populus grandidentata*, *Betula populifolia* and *Juniperus*. Excluding these, the forest trees that can be expected to persist and make up the final forest number but twenty-six. Apple trees are frequent and in one place in an old meadow have grown up into a veritable orchard of scrubby trees. Cherry trees, *Prunus Cerasus*, are scattered through the woods, usually in rather open places, but a few are in close growths of oak and birch and have assumed a typical forest form, tall and straight with clear trunks for at least twenty-five feet. There are also many young cherries growing up in thickets of *Viburnum* and among the oaks. Over all the ridge there have been frequent fires that check the growth of young trees, but in spite of this there were tree shoots—oak, hickory, ash, maple and elm—on over half of the quadrats, all old enough to have survived at least one fire, and on half as many more there were seedlings of one or two years that had not been subjected to fire.

In all 1,857 trees were counted, 37 per cent. of the total being oaks. Of these *Quercus velutina* was most abundant and made 13.4 per cent. of the total, *Cornus florida*—11, *Quercus prinus*—9.7, *Q. alba*—9.5, *Acer saccharum*—6.4, *Betula lenta*—6.2, *Hicoria glabra*—6.2, *Robinia Pseudo-acacia*—5.7, and *Fraxinus Americana*—4. If the trees that are not of forest type are excluded, the oaks would form over 50 per cent. of the total. The dominant tree in most parts of the ridge is the black oak, *Quercus velutina*, though some of the drier sections were dominated by the chestnut oak, *Q. prinus*. In a few low spots with deeper soil the sugar maple, *Acer saccharum*, dominated, and in the same localities were found most of the tulip trees, basswood, beech and hemlock. Practically all of the locusts were in spots previously cut clean for pasture or cultivation. With the locusts grew all of the pin oak, swamp-white oak, walnut, staghorn sumach and apple, and half of the sassafras, elm, gray birch and sour cherry. But one tree each of *Ailanthus*, *Celtis*, *Populus grandidentata*, *P. tremuloides* and *Quercus stellata* was found, and but two each of walnut and hemlock. Those of which but one specimen was found were

probably accidental entrants, the hemlock and walnut relicts of former more abundant growth. The chestnuts were all dead trunks with young root shoots. Other chestnuts had been cut in recent years, as witnessed by the stumps, so that the 62 dead trees (making 3.6 per cent. of the total) is only about half the number that would have been found before the chestnut canker wrought havoc among them. The young shoots are the heroic effort of the dying trees to hold their place in the forest, but are, of course, of no importance to the future of the forest. Evidently the climax forest will differ from the one it succeeds chiefly in the loss of the chestnuts, walnut and hemlock and in the addition of sour cherry, hackberry and ailanthus. The apple trees, while holding their own with the younger growth, show no sign of being able to persist in a denser and larger forest growth. The locust, sumach, aspens and gray birch are pioneer trees that will later give way. Judging of the future composition of the forest by the young growth, ash will become relatively more important than at present, as there were more of both seedlings and shoots than of any other tree. Hickory, white and black oak, black birch and sugar maple all have frequent shoots and less frequent seedlings, and even with the frequent ground fires will be at least as important in the future as at present. If fires could be prevented dense forest would soon develop. Tulip trees seem to be more sensitive to fire than others, for while seedlings of one season were common older ones or root shoots were entirely absent.

No definite correlation could be made between the shrubby and herbaceous vegetation and the trees. Chestnut oaks, which dominated certain parts of the ridge, had associated with them laurel, azalea and Vacciniums, none of which grew with the black oaks. Under the same trees, too, *Helianthus divaricatus* and *Anychia canadensis* had their greatest frequency indices. Black oak, the most abundant tree, and for large areas the dominant one, had no plants especially associated with it, though the most abundant plant of the region, *Falcata comosa*, had its highest frequency index under these trees, as did also *Poa compressa* and *Potentilla canadensis*. With sugar maple in the damper soil grew all the



*Asarum*, *Bromus ciliatus* and *Impatiens*, and the largest proportion of *Anemonella*, *Antennaria*, *Arisaema*, *Aster divaricatus*, *Polystichum* and *Adiantum*. With the locust trees grew plants characteristic of the open rather than of the woods; in fact, no forest plants at all were found except one plant of *Aquilegia* and one of *Botrychium virginianum*.

It is evident that the climax forest that will develop if allowed to will differ but slightly from the original forest of the region. This difference will be due to the loss of a few species, especially chestnut and hemlock, and the possible addition of a few new species, such as sour cherry and ailanthus, which will never make a large proportion of the trees. There will also be a greater proportion of black oak and white ash. The vegetation below the trees will show more change, as some introduced plants characteristic of open places are so well established in parts of the forest with shallow soil and somewhat xerophytic conditions that they may be considered a permanent part of the forest. Among such plants are *Potentilla canadensis*, *Poa compressa*, *Oxalis stricta*, *Fragaria virginiana*, *Ambrosia artemisiaefolia* and *Rubus occidentalis*.

## SOME INTRODUCED PLANTS OF UTAH

By A. O. GARRETT

The following paper is supplementary to one entitled "Some Introduced Plants of Salt Lake County," published in the October, 1919, number of *TORREYA*. In that paper sixty-eight species were enumerated as occurring in Salt Lake County. These, together with those here listed, brings the State catalog up to a total of 102 species.

69. *Asparagus officinalis* L. Garden Asparagus. A common escape along streams and irrigation ditches throughout the State.

70. *Rumex Patientia* L. Patience Dock. In Salt Lake and adjacent counties.

71. *Polygonum Convolvulus* L. Black Bindweed. Throughout the State.

72. *Chenopodium Botrys* L. Along the streams of canyons, Salt Lake County.

73. *Chenopodium Bonus-Henricus* L. In Ogden Canyon, Weber Co.

74. *Chenopodium murale* L. In Salt Lake County.

75. *Atriplex rosea* L. Tumbling Atriplex. One of the commonest weeds of waste places in the State, especially where the soil is more or less alkaline. Dr. Nelson described the western weed as a distinct species under the name of *Atriplex spatiosa*.

76. *Amaranthus graecizans* L. Tumbling Amaranth. Common in waste places throughout the State.

77. *Chelidonium majus* L. Sparingly escaping in Salt Lake City.

78. *Thlaspi arvense* L. Field Penny Cress or Mithridate Mustard. Reported from Logan, Cache Co.

79. *Camelina microcarpa* Andr. Small-fruited False Flax. Throughout the State.

80. *Isatis tinctoria* L. Dyer's Woad. Well established and common in various parts of Box-elder County.

81. *Malcomia africana* (Willd.) R. Br. A common weed around Manti, Nephi, Axtell, etc. In the vicinity of the reservoir south of Juab there are many acres already covered almost solidly with it. Naturally a weed of alkaline soils, it is likely to become one of the troublesome weeds of the State within a very short time.

82. *Galega officinalis* L. Goat's Rue. Collected at Logan, Utah, August 19, 1920, and sent to Dr. Rydberg, who determined it. The specimen is now at the New York Botanical Garden. The specimen collected was certainly an escape. How well it is established, however, I do not know.

83. *Medicago lupulina* L. Nonesuch. Well established in lawns and other grassy places throughout the State.

84. *Medicago officinalis* L. Alfalfa: Lucerne. Escaping from cultivation throughout the State.

85. *Onobrychis Onobrychis* (L.) Rydb. (*O. sativa* Lam.). Sandfoin. Escaping and well established in Rock Creek Canyon, near Provo, Utah Co.

86. *Tribulus terrestris* L. Bur-nut. Well established in Salt Lake City along railroad tracks, where it has probably come from California. The weed is giving a great deal of trouble to automobile tires in California, where the expressive name of "Puncture Vine" is given to it.

87. *Hibiscus Trionum* L. Bladder Ketmia. This plant was observed by me to be well established in cultivated fields at North Ogden, Weber County, and at Provo, Utah County, during the summer of 1919. Last summer I noticed it in cultivated fields at Ogden. None of the Floras give this plant for Utah.

88. *Daucus Carota* L. Carrot; Queen Anne's Lace. Along irrigation ditches in Salt Lake County. Well established.

89. *Cuscuta planiflora* Tenore. Alfalfa Dodder. Common and destructive in alfalfa fields throughout the State.

90. *Anchusa officinalis* L. (*A. arvalis* L.). Alkanet. Escaping and well established in Rock Creek Canyon, near Provo, Utah County.

91. *Cynoglossum officinale* L. Common Hound's Tongue. This weed, detested especially by sheep men, is thoroughly established in Logan Canyon and along the railroad tracks in several places north and south of Logan, especially at Mendon. It is also equally well established at Nephi, Juab County.

92. *Solanum villosum* Mill. Vigorous plants of this weed were observed in cultivated gardens near Lewiston, Cache Co., August 20, 1920. A specimen was sent to Dr. Rydberg for determination.

93. *Hyoscyamus niger* L. This plant has been reported from Kaysville, Davis Co., as well established.

94. *Verbascum virgatum* With. Moth Mullein. Growing abundantly near Ensign Peak, above Salt Lake City.

95. *Veronica Tournefortii* C. C. Gmel. (*V. Buxbaumii* Tenore.) Thoroughly established in Salt Lake and Wasatch Counties.

96. *Veronica hederaefolia* L. Ivy-leaved Speedwell. Reported from Logan, Cache Co.

97. *Dipsacus sylvestris* Huds. Teasel. Thoroughly established on the sides of the ponds along the railroad tracks, etc., from Bountiful, Davis Co., north to Logan, Cache Co., and beyond.

98. *Maruta Cotula* (L.) DC. (*Anthemis Cotula* L.) Dog Fennel; Mayweed. Well established and increasing in Utah, Salt Lake and Beaver Counties, and probably in other parts of the State where it has been introduced.

99. *Sonchus arvensis* L. Field Sow Thistle. An abundant weed along the streets in the southern part of Salt Lake City.

100. *Tragopogon dubius* Scop. Yellow-flowered Salsify. Becoming fairly common at Salt Lake City, but abundant in Cache Co.

101. *Inula Helenium* L. Elecampane. Sparingly escaping, but well established, at Provo, Utah Co., and Orangeville, Carbon Co.

102. *Onopordon Acanthium* L. Cotton Thistle; Scotch Thistle. Permanently established near Grantsville, Tooele Co., and at Salt Lake City.

EAST HIGH SCHOOL,  
SALT LAKE CITY, UTAH.

### SHORTER NOTES

THE J. ROBERTS LOWRIE HERBARIUM.\*—During August, 1920, the officials of The Pennsylvania State College received a letter from Mr. Roberts Lowrie, of Philadelphia, stating that it was the desire of the family to present the herbarium, prepared by his father, Mr. J. Roberts Lowrie, formerly of Warriorsmark, Pa., to the College. Acting on the suggestion contained in the letter, the writer, accompanied by Professor C. R. Orton, made a visit to the Lowrie residence in Warriorsmark to accept the herbarium on behalf of the College and to learn more of the botanical activities of its maker. On this and a subsequent visit to Warriorsmark, a village at the base of the Bald Eagle Ridge about twenty-five miles southwest of State College, we were most cordially received at the beautiful old homestead by Miss Sarah R. Lowrie,

\* A note presented to the Botany Seminar, The Pennsylvania State College, March 16, 1921.

daughter of Mr. J. Roberts Lowrie. From Miss Lowrie and from an account in the Botanical Gazette,\* written by Dr. Thos. C. Porter, shortly after the death of Mr. Lowrie, we gained the following interesting information regarding the life of Mr. Lowrie.

In 1854 Mr. Lowrie took up his residence at Warriorsmark, having taken the position as legal adviser and general manager for what was at the time the largest iron manufacturing firm in the United States. This firm "owned one of the largest estates in central Pennsylvania, including farms, furnaces, ore-banks, and many thousand acres of mountain lands covered with forests." Mr. Lowrie was strongly inclined to the study of the natural sciences, particularly botany, and, as Dr. Porter points out, this situation gave him a fine opportunity for such studies. That Mr. Lowrie took advantage of this opportunity to study the native flora is evidenced by the fine herbarium he left which is rich in the rare and interesting plants of central Pennsylvania. The fact that specimens were taken in some of the regions which are now favorite collecting grounds for the botanists of the College adds further interest to this collection. During the sixty-six years since the founding of the Pennsylvania State College, Bear Meadows, an elevated mountain-bog, has been a famous place for botanical explorations. Mr. Lowrie collected there before the college was founded. *Listera convallarioides* Hook., said by Porter to be known in no other station south of northern New York, was collected in Bear Meadows by Mr. Lowrie in 1853. *Prunus Allegheniensis*, described by Porter, a restricted species of central Pennsylvania, was brought to light by the efforts of Mr. Lowrie. *Aster Lowrieanus*,† dedicated to Mr. Lowrie by Dr. Porter, is an evidence of high esteem for contributions "to our knowledge of the flora of central Pennsylvania."

Not only did Mr. Lowrie build up his herbarium with collections from his own region, but through his acquaintance with other botanists he arranged for exchanges so that many other

\* Bot. Gaz. 11: 64. 1886.

† Bull. Torrey Club 21: 121. 1894.

parts of the United States are represented by specimens. The very numerous specimens collected by Dr. Porter are of particular interest, since the Porter herbarium, originally at Lafayette College, Easton, Pa., has been so severely damaged by fire.

The specimens are mounted on standard size sheets and are in good repair. In going over the collection it was found that there are 2,750 specimens. These represent 144 families and 707 genera. In addition to the mounted and classified specimens, there are a large number, perhaps a third as many more, unmounted and not incorporated into the collection. These came into our hands in the condition in which they lay on the owner's work table at the time of his death.

It may not be out of place to mention here that Mr. Lowrie's love of plants was further evidenced by the unusually attractive and extensive manner in which he converted the grounds about his house into an arboretum. These beautiful grounds filled with rare and interesting shrubs and trees, both native and exotic, occupy a space of nearly twenty acres. During the thirty-five years since the death of Mr. Lowrie this veritable park has not had the care and attention that it would have received from its originator, but even after this long lapse it is still a most remarkable place, both for its beauty and scientific interest. The wonderful afternoon which we spent there last August will not soon be forgotten, and it is our hope that this living monument may be long preserved to flourish in memory of its maker.

FRANK D. KERN.

CYNOSURUS ECHINATUS IN OREGON.—In the February, 1920, issue of the American Botanist (Vol. 26, No. 1) attention was called to the collection of *Cynosurus echinatus* at Eugene, Oregon. It was also recorded in TORREYA (Vol. 19, No. 10, p. 189). Since this species is still very rare in the United States, it might prove of interest to state in detail the conditions of its growth and occurrence. My first specimens were obtained in June, 1919, on Skinner's Butte, which is a very good station for the study of grasses; it is directly north of Eugene—between the city and the Willa-

mette River. The soil here is dry both winter and summer on the open south side. On the north side, however, is a heavy wooded area. Among the typical grass flora found on these rocky south slopes the most common species are: *Aspris caryophyllea* (L.) Nash; *Poa pratensis* L.; *Poa annua* L.; *Poa compressa* L.; *Poa scabrella* (Thurb.) Benth.; *Festuca idahoensis* Elmer; *Festuca megalura* Nutt.; *Gastridium ventricosum* (Gouan) Schinz and Thell.; *Elymus Caputmedusae* L.; *Elymus glaucus* Buckl.; *Sitanion jubatum* Smith; *Agropyron tenerum* Vasey; *Stipa Lemmoni* Scribn.; *Bromus marginatus* Nees; *Bromus hordeaceus* L.; *Bromus villosus* Forsk.; and *Agrostis Hallii* Vasey.

The plants of *Cynosurus echinatus* were on the southwest lower slope of the butte, overlooking the railroad. There were a large number of fine specimens along a dry ditch and a road which leads to the summit. They were growing thickly together, but only in this one restricted location. Last summer the number had increased, and the dead stalks of the year before could still be easily recognized.

I was greatly surprised in June, 1919, to find a few specimens also on the lower west side of Spencer's Butte, along a narrow trail, in a cleared space overgrown with grass and surrounded on all sides by dense woods. This butte is 2,063 feet high and is about six miles south of Eugene. On both buttes this grass was found in rather dry, rocky soil. Prof. J. K. Henry has included this species in his Flora of Southern British Columbia on page 37, and writes me in regard to it: "*Cynosurus echinatus* is a not uncommon introduced grass on dry hillsides or even occasionally in gardens near Victoria." He first collected it there about five years ago.

In appearance *C. echinatus* is not very similar to *C. cristatus*, which is sometimes found on parkings in Eugene. The spikelets are somewhat alike in the two species, but the awns of *C. echinatus* are long and produce a prickly or burry effect which is not present in *C. cristatus*. In the former the panicles are long and slender, while in the latter they are compact and hardly over 3 cm. long. Both species are slender and rather inconspicuous. *C. echinatus*

could not be mistaken for any of our native grasses. The only grass that grows here that even suggests it is a small dry and stunted *Dactylis glomerata*—and this an introduced species.

In order to give an idea of the occurrence of *Cynosurus echinatus* in the United States, the following list of herbarium material will indicate its scarcity:

- \* 1. Gray Herbarium. No specimens from the United States.
- \* 2. New York Botanical Garden, also none from the United States.
- \* 3. U. S. National Herbarium.  
California: Marin Co., 1912, *Eastwood*.  
Oregon: Eugene, *Bradshaw*.

Of the four species now retained in the genus *Cynosurus* L., only two are found introduced in the United States; all are of the Mediterranean region. *C. cristatus* L. is sometimes cultivated in this country, but is of practically no economic importance. The other seven Linnean species are now referred to other genera. Hackel says in Engler and Prantl (Nat. Pflanzenf. II. 2, 73): "*C. echinatus* L. in Südeuropa, Ackerunkraut." *C. echinatus* belongs to the section *Phalona* (which Adanson made a genus), while *C. cristatus* is included in the section *Eucynosurus*. There is a good figure of *C. echinatus* in Engler and Prantl. Besides the material from the United States, the following regions are represented by collections in the U. S. National Herbarium: South America; Africa; New Zealand; Italy; France; Syria; England; Switzerland; Spain-Portugal; Austro-Hungary-Balkans; and the Canary Islands. Macoun collected it as far back as 1908 in Nanaimo, Vancouver Island.

For assistance in the preparation of data I am deeply grateful to: Mrs. Agnes Chase; Dr. J. H. Barnhart; Dr. J. K. Small; Miss Mary A. Day; Prof. J. C. Nelson; and Prof. J. K. Henry.

R. V. BRADSHAW.

EUGENE, OREGON.

THE BOY SCOUTS AND CONSERVATION OF WILD FLOWERS.—One of the subjects recently offered to scouts for merit badges is

\* Duplicates of my collections are to be deposited in these herbaria.



botany. To secure this badge a scout must collect, mount and label fifty specimens of flowering plants, *without the roots*. In addition, five each of ferns, mosses, liverworts, lichens, fungi and algae must be prepared and, if possible, labeled. One of the other requirements is an essay of at least two hundred words on the conservation of wild flowers. Both the scout handbook and the merit badge pamphlet on botany emphasize the necessity of protecting plants and caution scouts not to gather rare flowers. Parts of two essays recently submitted to the editor by applicants for the Botany Merit Badge are given here as showing the understanding scouts have of the importance of wild flower conservation.

"Leave the flowers alone. Let them grow. By doing this you can help to increase the beauty of the country. Among the flowers that are being exterminated are the Jack-in-the-Pulpit, Spring Beauty, Mountain Laurel, Flowering Dogwood and Wild Pink. It will be noticed that all of these are now seldom seen near the cities and some of them seldom in the woodlands. A good rule to follow is 'Never collect one flower unless there are three seen, nor collect two unless six are seen, and never collect a root unless there are more than ten plants in the colony.'

"One of the most important works of Botanists should be the conservation of wild flowers. This is especially important in the parks and other places about cities. If people are allowed to gather as many flowers as they wish some of the rarer flowers will soon be extinct in the unprotected places. Among those flowers which are in danger of extinction is the Pink Lady's Slipper. This flower may be found in deep woods along with the mountain laurel. It is very attractive and likely to attract the attention of any passer by. The Mountain Laurel also is in danger of being wiped out, for it is gathered in great bunches by people who picnic in the mountain woods. Although it is abundant now it is being rapidly diminished."

THE EDITOR.

## REVIEWS

**Reinheimer's Symbiosis\***

The author's thesis with regard to evolution is that everything normal and sound in organic evolution is due to biologically righteous (*i.e.*, essentially coöperative) behavior, whilst everything abnormal and pathological is due to unrighteous (*i.e.*, fundamentally predatory) behavior. This is not the place to discuss the main thesis of the book, which is not offered as a contribution to botanical literature, but this is the place to note that the book contains numerous statements about plants that are inaccurate or incorrect, and sure to mislead readers not familiar with botany. Thus on page 41 the author refers to a statement by W. C. Worsdell that "the root of the vascular plant is less prone than any other organ to deviate from the normal form," and then adds: "When we bear in mind that . . . the premier industry of the plant . . . consists in the conversion of inorganic into organic material, it seems doubly remarkable that those parts which are most busily engaged upon such industry, though ever so unobtrusively and even shut away from sunlight, are the most robust in health," etc. On page 57 the author says: "I have contended these *ten years* that there is a biological causation of disease. . . ." The italics are the reviewer's. No biologist needs to be reminded that a biological causation of disease was experimentally demonstrated by Pasteur some forty-odd years ago. On the same page we read: "Few would have imagined that the case of hay fever provides an illustration of the biological causation of disease." The very name "hay" fever indicates that such a relationship has been commonly recognized for years.

On page 58 the action of pollen in causing pollinosis is explained on the ground that its "protoplasm is so poor in food values," though it is now common knowledge that so-called "hay fever" may be caused by a great variety of proteins, such as beans, beef, cheese, fowl, fish, whole wheat and others, standing at the top of the list in food value. On the same page pollen

\* Reinheimer, H. *Symbiosis: A socio-physiological study of Evolution*. Pp. xii + 295. Headley Brothers, London, 1920.

grains are referred to as seeds. On page 59 we read that "the large majority of the plants whose pollen give rise to hay fever are worthless weeds," yet the list of well-known offenders in this respect includes such economically important plants as cherry, clover, corn, timothy, rose, and others, and numerous trees of great importance for timber.

Chapter V, *The "intelligence" of plants*, is mainly a commentary on Maeterlinck's essay, *L'intelligence des fleurs*, which the author apparently accepts, *litteratim*. He quotes Maeterlinck's citation of the seeds of the mistletoe, juniper and mountain-ash, "which provide for their dissemination by birds and which, to entice them . . . lurk inside a sweet husk." Maeterlinck interprets this as evidence on the part of the plant, of "a powerful reasoning faculty . . . a remarkable understanding of final causes." Reinheimer (p. 87) challenges anyone "to produce a better and more rational interpretation of these phenomena"; and adds that, "the assumption is by no means fanciful that the plant is also a direct sustainer of animal intelligence. The animal takes in 'knowledge' with its food . . . 'knowledge' which is 'predigested' by the plant." In this connection, it would be malicious to note that, toward the end of the same paragraph, the author quotes Prof. John Dewey as saying that, "it is not we who think in any actively responsible sense; thinking is rather something that happens in us."

C. STUART GAGER.

#### Clements's Rocky Mountain Flowers\*

A lady, intensely struck with the wealth of form and coloring of the Texas wild flowers, once wrote me inquiring for a book describing and illustrating this flora in such a way that she could with her all but forgotten elementary botany "spot" their names and learn more about them. I wrote her, regretting the lack of

\* Clements, Frederic Edward and Edith Schwartz Clements. *Rocky Mountain Flowers. An illustrated Guide for Plant-Lovers and Plant-Users.* Field ed. Pp. xxxi + 392. Illustrated. The H. W. Wilson Co., New York. 1920. Price \$4.50.

such a book for that section. No doubt many tourists, ranchmen and others in the Rocky Mountain region and adjacent plains have wished also for just such a book. In "Rocky Mountain Flowers," Professor Clements and his wife have, I believe, produced such a volume. There are details that might be criticized, but in a section where the wild flowers are so striking and varied in color and form, and so plentiful that they are often a dominant note in the coloring of the landscape, such a book is much to be desired, and criticisms as to slight defects in the accuracy of the color plates and in the use of such unfamiliar Latin names as Brassicaceae for Cruciferae are out of order. The reviewer, who has collected plants both as an amateur and a professional in this region, finds this volume a distinct innovation for that part of the country. The book has easily worked keys, with family and genus descriptions, and covers the wild flowers of the West from the Canadian Rockies to California and New Mexico, and as far east as the western halves of the plains states of Kansas, the Dakotas and Nebraska. Both keys and descriptions are simple enough for the beginners in high schools and colleges, for general botanists with slight taxonomic training, for tourists, and for the general lover of nature who desires to know plants and talk about them, but who has not had the opportunity, time or inclination to wade through a great mass of technical detail in order to gain the very general knowledge he desires. In this volume the general, rather than specific, aspects are emphasized, making it especially valuable for the forester and ecologist who of necessity must do much of their identification work in the field, and who must, therefore, have descriptions not difficult to apply. There are 25 full-page color plates illustrating 175 floral types in such a way that the most untrained layman would recognize them. Added to these are 355 black and white illustrations of floral "types." There is a key flower chart which should be of great help in plant identification, especially to those other than professional systematists. The book is convenient in size, very attractively bound in dark red limp leather, and contains a glossary of scientific terms.

ORLAND E. WHITE.

**Clements's Flowers of Mountain and Plain\***

In part this book is an abridged edition of "Rocky Mountain Flowers," in the sense that it contains the same 25 color plates illustrating one hundred and seventy-five of the most striking western mountain and plains wild flowers. There are no keys nor technical descriptions, for the volume is intended primarily for travelers and flower lovers who wish a souvenir of their trip in this region, and who desire a means of easily recognizing flowers met on tramping excursions, or seen from car windows or an automobile. Each plant illustrated is accompanied by text giving both its common and scientific names, something about the kind of place it grows in, its time of bloom, and often other facts concerning its life history which would be of general interest. For example, in many cases the edible parts of the plant are noted, while in other cases facts regarding insect pollination, stock poisoning or some ancient superstition are set down. In the reviewer's opinion, this is just the sort of book to give your unbotanical friend living in that region or who is going there on a vacation. It is compact, nicely bound and authoritative.

ORLAND E. WHITE.

**Harshberger's Pastoral and Agricultural Botany†**

Although issued as a textbook of agricultural botany for colleges and possibly secondary schools, this volume, from its contents, is evidently intended primarily for a very limited group of students, such as those interested in veterinary science or in range problems. The reviewer can not think of any agricultural college in which this volume could be profitably used as a regular course text. Approximately one third of the book, or nine of the eighteen chapters, is devoted to stock-poisoning plants, their distribution, their effect on stock and human beings, and the remedial measures. The remaining nine chapters consist of one on feeds and feeding, three on grasses with emphasis on their economic

\* Clements, Edith S. *Flowers of Mountain and Plain*. 2d ed., enlarged. Pp. 79. Illustrated. The H. W. Wilson Co., New York. 1920. Price \$2.75.

† Harshberger, John W. *Pastoral and Agricultural Botany*. Pp. xiii + 294. Illustrated. P. Blakiston's Son & Co. Philadelphia. 1920. Price \$2.00.

phases, such as their importance as cereals and forage plants; two chapters emphasizing in some detail the economic value of the legume or pea family, and one chapter on the value of certain bacteria in accumulating nitrogen. This chapter (XVI) mentions the value of green manures and the failure of the preparation "nitragen" in disseminating the nitrogen bacteria. It also contains a long list of nitrogen-consuming plants, very tersely described and classified as to part of plant economically valuable. The final two chapters are devoted to weeds and weed control and agricultural seeds, seed selection and seed-testing. The author evidently considers plant breeding and genetics, plant physiology and plant diseases as subjects of too specialized a nature to include in an elementary agricultural text. So far as the reviewer can determine, they are not considered. Extensive bibliographies on each subject are given, most of the material being very accessible. Many interesting problems are touched upon. On page 219 the fertilizer waste due to the common method of sewage disposal from large cities is discussed, while on page 83 a method of desensitizing human beings against poison ivy is described. The treatment takes one month and gives immunity for one month. On pages 90-91 is a detailed account of Socrates' death by poison hemlock, taken from Plato. On page 62 the planting of garden larkspur in masses about gardens is advised by Froggat because of its poisonous nature, as a protection against locusts and grasshoppers. Other species are cited as deadly to maggots and ticks. This treatment, in the reviewer's opinion, would probably prove about as efficacious as the proverbial Frenchman's flea-powder, or the use of castor bean plants as protection against mosquitoes. On pages 15 and 82 blondes (blue eyes) are said to be very susceptible to poison ivy, while brunettes (dark, swarthy skins) are practically immune. This statement does not accord with the reviewer's experience. Among eleven blondes questioned, six, including the reviewer, were practically immune, while five were susceptible. Of six brunettes, five were susceptible and one was practically immune. On page 101 nightshade berries (*Solanum nigrum*) are mentioned as poisonous. On page 131, Pt. II, Pam-

The first part of the scientific program was by Dr. John K. Small, "Notes on a Recent Trip to Florida." The second item of the program was a preliminary report of a trip to Trinidad by Dr. N. L. Britton, illustrated by interesting specimens, including the fruits of various tropical trees, shrubs and vines and a series of fossil leaves from a bed of plant remains sixty feet thick. Dr. Liberty Hyde Bailey then gave an entertaining and instructive account of his recent experiences in travelling and botanizing in China.

#### MEETING OF OCTOBER 12

The meeting was held in the botanical laboratory of Schermerhorn Hall, Columbia University.

The following were elected to membership: Miss Eliza Frances Andrews, Prof. Forman T. McLean, H. Nordheim, G. G. Orphal, H. E. Piaget, Dr. W. A. Setchell, Wilhelm Suksdorf, Raymond H. Torrey, Mrs. Arthur E. Sproul.

The evening's program consisted of short reports by members of their botanical experiences during the summer. Prof. R. A. Harper spoke of his experiments in growing various sorts of maize. Dr. J. A. Harris told of his explorations in Utah and of the study of the osmotic concentration of cell-sap of desert plants. Dr. Michael Levine had continued his investigations of crown-gall, this year obtaining interesting results with beets. Dr. B. O. Dodge told of his culture of various parasitic fungi, and Mr. Alexander Gershoy of his studies of cleistogamy in violets. Dr. Alfred Gundersen had been in the Catskills and noted the contrast in vegetation on different slopes. The president of the club had been in Bermuda, and the secretary in Texas and the Pocono region of Pennsylvania. The fullest report was by Dr. T. E. Hazen. In the spring he was with Dr. Britton's party in Trinidad, but he told us chiefly of his visit during the summer to northern Europe, especially to Norway. Two of his most unexpected results were the obtaining of the organism causing "red snow" in Norway and the discovery of a new and interesting species of the same family in the vicinity of London.

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**OTHER PUBLICATIONS**  
**OF THE**  
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**(1) BULLETIN**

A monthly journal devoted to general botany, established 1870. Vol. 47, published in 1920, contained 598 pages of text and 17 full-page plates. Price \$4.00 per annum. For Europe, \$4.25. Dulau & Co., 47 Soho Square, London, are agents for England.

Of former volumes, 24-47 can be supplied separately at \$4.00 each; certain numbers of other volumes are available, but the entire stock of some numbers has been reserved for the completion of sets. Single copies (40 cents) will be furnished only when not breaking complete volumes.

**(2) MEMOIRS**

The MEMOIRS, established 1889, are published at irregular intervals. Volumes 1-17 are now completed. The subscription price is fixed at \$3.00 per volume in advance; Vol. 17, containing Proceedings of the Semi-Centennial Anniversary of the Club, 498 pages, was issued in 1918, price \$5.00. Certain numbers can also be purchased singly. A list of titles of the individual papers and of prices will be furnished on application.

**(3) The Preliminary Catalogue of Anthophyta and Pteridophyta** reported as growing within one hundred miles of New York, 1888. Price, \$1.00.

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